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observations are called in question by Dr. Mayer, who, however, so far as we know, has never published any observations on the embryology of this or any other animal, the entire essay being based on facts observed by previous writers.

While the essay is interesting and suggestive, the leading idea that hexapodous insects first appeared as winged organisms and not as larval forms, will, we think, be found to have no valid foundation. We should with as much reason derive the *acalephs* from an ancestral free-swimming medusa, and not from a hydra-like form, or the *Amphibia* from the tailless rather than the tailed forms, views with which we imagine few zoölogists would agree. — A. S. PACKARD, JR.

ANTHROPOLOGY.

ABORIGINAL (?) GUN-FLINTS. — Among the ancient ruined buildings of Utah and Arizona I picked up two curious objects of stone, the use of which I for some time was unable to determine. At first I supposed them to have been arrow-points or scrapers which had been broken at the points, leaving the square butts, but on careful examination I found that they had each been laboriously chipped on the four edges, and from their general appearance had undoubtedly been used as gun-flints. In order to satisfy myself on this point, I procured a large number of modern flints made by the whites, and on comparison I found that the two from the West resembled them closely in size and shape, only differing in material and in the manner in which they had been flaked. They are from one eighth to one fourth of an inch in thickness, number one being thickest at the lower or striking edge and number two at the upper. The material of number one (by far the finer specimen) is a light gray flint with white and pink water markings. That of number two is a pink agate sprinkled with specks and blotches of red moss. Both of these varieties of stone are found throughout the West, and objects manufactured from them are numerous amongst the ruins. They are not to be found, except in rare cases, if at all, in the eastern portion of the United States, and we may therefore reasonably suppose that the flints were made on the Pacific slope. That such objects of a civilized people should occur among the rude implements of an aboriginal and prehistoric race is somewhat surprising, especially when it has heretofore been supposed that this particular section has not been traversed by whites until the past few years, when the flint-lock has been superseded by the percussion cap. This fact, however, cannot be vouched for, and although we know that no official expeditions have passed over this country, it is possible that hunters or wandering scouts may have visited the ruins of the San Juan Valley. The district in which I found the flints has not been occupied by tribes of Indians for many years, as it is a barren, dry desert, devoid of water (with the exception of the warm San Juan) and almost destitute of grass and wood. It is, indeed, a matter of doubt whether it has been inhabited since the disappearance of the Pueblo race which built and occupied the old houses which have been

lying in ruins for centuries. The fact that these objects were discovered among arrow-heads, pottery, and implements of undoubted antiquity, associated with no objects of modern date, would point to an ancient origin. The flint-lock, however, did not come into use until the middle of the seventeenth century, having originated in France about the year 1635. They could not, therefore, have been dropped by the Spaniards, who traveled through Arizona and New Mexico in the early part of the *sixteenth* century. The match-lock was employed by them in their conquests through Mexico and the north, even after the wheel-lock had been invented in Italy.

The two specimens possess all the appearance of having been fashioned by the aborigines in their peculiar manner. It is not impossible that they may have been made by Indians under the direction of European hunters or explorers, and, on the other hand, they may have been manufactured by whites. The nomadic tribes of the Southwest must have procured arms from the adventurous pioneers as early as the middle of the eighteenth century, and flints must necessarily have been made by the savages as the first ones were lost or broken. Since the flint-lock has been out of use for many years, it is highly probable that the two objects herein described were dropped where they were found, as early as the latter part of the last century or during the first few years of this. They are particularly interesting, however, as showing that the valley of the San Juan River has in all probability been traversed by whites, possibly a century or more ago. It is also possible that the flints may have been brought to that section by Indians from a distant locality; but the first supposition seems to me the most reasonable. — EDWIN A. BARBER.

ANTHROPOLOGICAL NEWS. — Twenty-eight pages of Nos. 1 and 2 of the *Mittheilungen der anthropologischen Gesellschaft in Wien* are taken up with a discussion by Ferd. Freiherrn von Adrian upon the influence of vertical position on the earth's surface upon human settlements. The article is rendered exceedingly valuable by abundant bibliographical references. In *Revue Scientifique* for July 15th, M. Paul Bert handles a kindred topic in a contribution entitled "La Pression de l'Air et les Êtres vivants. In the same number of the review, Turkish manners in 1650 are discussed by a "traveler from Algeria."

Some light is thrown upon prehistoric batons, so called, by a pamphlet published in Lyons by M. F. Chabas, and entitled *Sur l'Usage des Bâtons de Main chez les Hébreux et dans l'ancienne Égypte*. One of the best features in the treatise is the collation of authorities.

M. Émile Guimet has edited in the same form from the Lyons press a tract by M. Chabas upon the time of the Exodus. From numerous parallelisms between the Jewish Scriptures and the papyri the learned author concludes to place the Exodus in the reign of Menephta I., the successor of Rameses II., of the XIXth dynasty. The paper was first read before the Academy of Science, Belles-Lettres, and Art of Lyons, April 27, 1875.

The contents of Nos. 6 and 7 of *Matériaux* are very nicely distributed over the countries of Europe in which archæological investigations are in progress. Vladimir de Mainoff contributes an article upon the Kourganès (tumuli) of Little Russia. These structures are the burial-mounds of the Severianes, in the transition period between the bronze and the iron age. Some of them contain burials by inhumation, others by incineration. In each of the two kinds of Kourganès there is a gradation of the form of interment.

Scandinavia has an unusual share of space devoted to the following themes: the State Museum of History, the history of Swedish archæological researches; the age of bronze in Northern Sweden; the antiquities of Bohuslaen, and, finally, three very instructive sketches upon Finnish antiquities and history.

With reference to France, we have a continuation of the discussion between Abbé Maillard and M. Mortillet upon the stratigraphical relation between the Solutrian and the Moustierian Age, an account of prehistoric monuments in different districts of France, and a very valuable table of the number of stations, grottoes, and dolmens in each of the departments.

The review of Italy embraces papers relative to archæological matters purely. The only article relative to extra-European matters is an account of a prehistoric atelier at Hassi-el M' Kaddem, eight kilometres from the oases of Ouargla. Among the articles discovered were arrow-heads, beads, and pottery.

Richard Andree contributes to the Austrian *Mittheilungen* for February, 1876, an article upon lucky days, lucky meetings, and augury in the history of culture.

We have in the first quarterly part of the *Archiv für Anthropologie* the usual array of valuable matter. Dr. Schmidt, of Essen, gives us a paper upon the leveling of the skull. After examining the various plans and instruments which have been devised, the author concludes that the level which brings the beginning of the zygomatic arches over the opening of the ear in a line with the lower edge of the orbital cavity, adopted at a general meeting of the Göttingen society, is the best horizontal, coming the nearest to the true physiological horizontal, and having, of all the normals, the greatest stability. Professor A. Eclar contributes an article upon the influence of cranial deformation on the volume, position, and shape of the brain and of its separate parts. The name of this author is sufficient to render his work authoritative upon this vexed question. Professor Japetus Steenstrup reviews the question, "Have we found in the interglacial strata of Switzerland veritable traces of human beings or only the work of beavers?" Wood-cuts of sticks gnawed by modern rodents for food and for use are given. Shorter articles occur upon the quaternary fauna in the valley of the Donau, upon prehistoric and culture-historical terminology, upon the natives of

New Guinea and the neighboring islands, upon the Wetzikon sticks, and upon recent anthropological works which have appeared.

Professor Paolo Mantegazza contributes to *Archivio* a sixteen-page article upon the expressions of grief.

The subsection of anthropology was organized by the American Association at Buffalo, with Lewis H. Morgan as chairman and Otis T. Mason as secretary. Professor Morse, in his address before Section B, alluded to the eminent labors of Morton, Wyman, and others in special fields, and the list might be multiplied by adding the names of many living and dead, who, in America, have added materially to the progress of anthropology. The aim of the subsection of the American Association is to bring the authors of these researches together, and to make them better acquainted. It is earnestly hoped that the meeting to be held next year at Nashville will be crowded with anthropologists, specialists in the various fields of descriptive and deductive anthropology of extinct and extant races, in every part of its three divisions, of man, environment, and culture. — O. T. MASON.

GEOLOGY AND PALÆONTOLOGY.

PALÆONTOLOGY AND THE DOCTRINE OF DESCENT. — In an essay on the Pliocene fresh-water shells of Southern Austria, by Dr. Neumayr and Herr Paul, the authors describe numerous modifications of the genus *Vivipara* or *Paludina*, which occur in prodigious abundance throughout the whole series of fresh-water strata. Of this genus there are forty distinct forms (Dr. Neumayr very properly hesitates to call them all *species*) which are named and described in this monograph, and between which, as the authors show, so many connecting links, clearly illustrating the mode of derivation of the newer from the older types, have been detected. The authors, remarks Mr. J. W. Judd in *Nature*, have demonstrated that the species with highly complicated ornamentation were variously derived by descent — the lines of which are in most cases perfectly clear and obvious — from the simple and unornamented *Vivipara achatinoides* of the Congerien-schichten, which underlies the *Paludina* beds. Some of these forms have been regarded as types of a distinct genus (*Tulotoma*) by Sanberger. "And hence we are led to the conclusion that a vast number of forms, certainly exhibiting specific distinctions, and, according to some naturalists, differences even entitled to be regarded as of generic value, have all a common ancestry."

ICE-MARKS IN NEWFOUNDLAND. — In the second part of his article on Ice and Ice Work in Newfoundland, in the *Geological Magazine*, Professor J. Milne says that "the island itself, its principal bays, its mountains, its lakes and rivers, its lines of igneous protrusions, its ice-grooves and scratches, and the general strike of the rocks, which, as was shown by Jukes, may in part account for the tendencies of the other features, have all been shown to trend from about 27° east of north to